

UGA Onion Variety Trial Report 2023 – 2024 Crop Season

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Introduction

The University of Georgia evaluates short day onion varieties to determine their performance characteristics in standardized growing practices. Variety entries for the trial are submitted by participating seed companies. These trials are conducted at the Vidalia Onion and Vegetable Research Center (VOVRC) located in Lyons, Georgia.

Materials and Methods

There were 53 varieties entered into the 2023 – 2024 UGA Onion Variety trial. After seed entries were received, seedbeds were grown for transplant production by UGA staff at the VOVRC. Pre-plant seedbed treatment included a 75 gallon per acre fumigation treatment of metam sodium for weed and disease suppression. The seedbeds were planted on September 20, 2023 and the trial was transplanted on December 6, 2023. Upon harvest and grading, yield measurements are taken, and a 10 bulb sample of jumbo onions per plot is sent to the UGA Crop Quality Laboratory in Athens, Georgia, to undergo flavor testing. Seedbed and trial fertility, as well as fungicide programs are listed below. The trial evaluates each variety replication in a 20 foot long by 6 foot wide plot, containing 240 bulbs. Each variety was replicated four times and harvested based on a committee decision of maturity. The transplant population for the trial was equivalent to 87,120 plants per acre.

Seedbed Fertility:

500 lb/A of 5-10-15 applied September 5, 2023 (preplant incorporated)
200 lb/A of 5-10-15 applied October 30, 2023
200 lb/A of 5-10-15 applied November 6, 2023
200 lb/A of 5-10-15 applied November 17, 2023

Total lbs/A applied: 55 (N) – 110 (P) – 165 (K) – 33 (S) – 99 (Ca)

**Note: All fertilizer applications were applied with a First Products brand drop spreader.*

Seedbed Pesticides Applied:

<u>Date</u>	<u>Product Applied</u>
August 9, 2023	Vapam HL (75 gal/A)
September 19, 2023	Diazinon AG500 (2 qt/A) preplant incorporated
October 24, 2023	Badge SC (1 pt/A)
November 10, 2023	Badge SC (1 pt/A)
November 17, 2023	Badge SC (1 pt/A) + Fontelis (24 oz/A)
November 21, 2023	Badge SC (1 pt/A) + Fontelis (24 oz/A)
December 4, 2023	Nordox (1.75 lb/A)

Trial Fertility in Transplanted Field:

150 lb/A of 5-10-15 applied December 14, 2023
300 lb/A of 5-10-15 applied January 2, 2024
300 lb/A of 5-10-15 applied January 18, 2024
300 lb/A of 5-10-15 applied January 30, 2024
150 lb/A of calcium nitrate applied February 15, 2024
150 lb/A of calcium nitrate applied February 26, 2024

Total lbs/A applied: 99 (N) – 105 (P) – 157.5 (K) – 31.5 (S) – 151.5 (Ca)

**Note: Soil sample test results called for 125 -150 lb/A nitrogen, 60 lb/A of phosphorus, 90 lb/A of potash, and 40 – 60 lb/A of sulfur. All fertilizer applications applied with a First Products brand drop spreader.*

Fungicides Applied:

<u>Date</u>	<u>Fungicide Applied</u>
January 18, 2024	Rampart (2 qt/A) + Quadris Top (14 oz/A)
January 29, 2024	Rampart (2 qt/A) + Luna Flex (14 oz/A)
February 8, 2024	Bravo (1 qt/A) + Inspire Super (20 oz/A)
February 21, 2024	Bravo (1 qt/A) + Omega 500 (16 oz/A)
February 29, 2024	Bravo (1 qt/A) + Fontelis (24 oz/A) + Badge SC (1 pt/A)
March 15, 2024	Bravo (1 qt/A) + Omega 500 (16 oz/A) + Badge SC (1 pt/A)
March 21, 2024	Luna Flex (14 oz/A) + Badge SC (1 pt/A)

Herbicides Applied:

<u>Date</u>	<u>Product Applied</u>
December 7, 2023	Goal 2XL (1 qt/A) + Prowl (1 qt/A)

Table 1. Variety Entries in the 2023-2024 UGA Onion Variety Trial.

Variety	Company	Type
Candy Kim	Solar	Yellow Granex
Candy Ann	Solar	Yellow Granex
Candy Joy	Solar	Yellow Granex
SS 4001	Solar	Yellow Granex
SS 4002	Solar	Yellow Granex
Fast Track	Vilmorin-Mikado	Yellow Granex
Emy 55455 “Reforma”	Emerald	Yellow Granex
Emy 55126 “Copada”	Emerald	Yellow Granex
Emy 55457	Emerald	Yellow Granex
Sweet Agent	Seminis	Yellow Granex
Sweet Magnolia	Seminis	Yellow Granex
Century	Seminis	Yellow Granex
Sweet Azalea	Seminis	Yellow Granex
Macon	Bejo	Yellow Granex
Tania	Bejo	Yellow Granex
369	Bejo	Yellow Granex
Sweet Tule	Bejo	Yellow Granex
Maragogi	Bejo	Yellow Granex
Sapelo	DP Seeds	Yellow Granex
Georgia Boy	DP Seeds	Yellow Granex
DP 1407	DP Seeds	Yellow Granex
Early Sweet	DP Seeds	Yellow Granex
Superex	American Takii	Yellow Granex
XON-404Y	Sakata	Yellow Granex
XON-300Y	Sakata	Yellow Granex
XON-106Y	Sakata	Yellow Granex
Vidora	Nunhems	Yellow Granex
Plethora	Nunhems	Yellow Granex

Variety	Company	Type
Nunhems 1014	Nunhems	Yellow Granex
Nunhems 1011	Nunhems	Yellow Granex
10258	Hazera	Yellow Granex
A2801	Hazera	Yellow Granex
A2849	Hazera	Yellow Granex
A2290	Hazera	Yellow Granex
A2800	Hazera	Yellow Granex
OSYF12-7091	Crookham	Yellow Granex
OSYF10-4021	Crookham	Yellow Granex
OSYF22-4022	Crookham	Yellow Granex
Gilmore 26	Pike’s Seed	Yellow Granex
AG-3310	Amerigrow	Yellow Granex
Rio Del Sol	American Takii	Yellow Grano
Rio Dulce	American Takii	Yellow Grano
Dulciana	Nunhems	Yellow Grano
Joelino	Hazera	Yellow Grano
380	Bejo	Yellow Grano
Monjablanca	Bejo	White
Red Halen	Seminis	Red
Red Maiden	Seminis	Red
Red Duke	Bejo	Red
Chianti	DP Seeds	Red
Sofire	Nunhems	Red
Mata Hari	Nunhems	Red
Torro Rosso	Hazera	Red

Harvest Timing

Each variety was selected for harvest based upon signs of weak tops and/or adequately sized bulbs. Participating seed companies reserve the right to specify when or what characteristics determine the harvest of their variety. Varieties were clipped 7 days after their dig date. Growing Degree Days (GDD) aid us in forecasting harvest maturity for onions. A base temperature of 50°F is used in formulating GDD's accumulated.

Table 2. Harvest Schedule of 2023-2024 Onion Variety Trial.

Variety	Maturity	Planting Date	Dig Date	Days After Transplanting to Digging	GDD Accumulation 50°F Base
Candy Joy, Candy Ann, SS4001, Fast Track	Very Early	December 6, 2023	April 2, 2024	118	740
Candy Kim, SS4002, 1407, Early Sweet, Vidora, 1011	Early	December 6, 2023	April 8, 2024	124	797
Sweet Agent, XON-404Y, XON-300Y, OSYF10-4021, OSYF12-7091, OSYF22-4022, AG 3310	Early – Main	December 6, 2023	April 15, 2024	131	923
Red Maiden, Tania, Red Duke, Maragogi, 380, Sweet Tule, 369, Sapelo, Rio Del Sol, Rio Dulce, XON-106Y, Plethora, Dulciana, Sofire, 10258	Main	December 6, 2023	April 22, 2024	138	1068
Copada, Reforma, EMY 55457, Sweet Magnolia, Century, Sweet Azalea, Red Halen, Monjablanca, Macon, Chianti, GA Boy, Superex, Mata Hari, 1014, Torro Rosso, Joelino, A2801, A2849, A2290, A2800, Gilmore 26	Late	December 6, 2023	April 29, 2024	145	1197

Results and Discussion

The following tables show field weights, marketable yields, colossal yields, jumbo yields, medium yields, and cull yield. For additional information regarding the performance of a given variety, please contact your Extension Agent or the Vidalia Onion and Vegetable Research Center. We would like to thank the participating seed companies as well as the Vidalia Onion Committee for their support of this trial.

Table 3. Vidalia Onion **Field Weights** (40 lb. boxes/acre) measured ***before*** grading.

Variety	40 lb. box/A	
Sweet Magnolia	1868.32	a
1014	1800.25	ab
Reforma	1760.55	abc
Joelino	1724.25	abcd
XON 106Y	1701.56	abcde
Century	1697.03	abcdef
Macon	1683.41	abcdefg
Tania	1678.88	abcdefgh
Monjablanca	1665.26	abcdefghi
Georgia Boy	1649.38	abcdefghij
Sweet Azalea	1636.9	abcdefghij
AG-3310	1630.1	abcdefghij
Torro Rosso	1628.96	abcdefghij
Sweet Agent	1619.89	abcdefghijk
Red Halen	1618.75	abcdefghijk
Superex	1600.6	bcdefghijk
Maragogi	1581.32	bcdefghijkl
Rio Dulce	1565.44	bcdefghijkl
A2849	1562.03	bcdefghijkl
10258	1541.62	bcdefghijklm
Dulciana	1529.14	cdefghijklmn
EMY 55457	1525.73	cdefghijklmno
A2290	1503.05	cdefghijklmno
Sweet Tule	1500.78	defghijklmno
OSYF22-4022	1486.03	defghijklmno
369	1484.9	defghijklmno

Variety	40 lb. box/A	
Chianti	1479.23	defghijklmno
Red Duke	1471.28	defghijklmno
A2800	1467.88	defghijklmno
Mata Hari	1467.88	defghijklmno
A2801	1458.81	efghijklmno
Gilmore 26	1438.39	fghijklmnop
Sapelo	1438.39	fghijklmnop
XON-300Y	1437.25	ghijklmnop
Plethora	1429.99	ghijklmnop
380	1423.64	hijklmnop
OSYF10-4021	1417.97	ijklmnopq
Copada	1415.7	ijklmnopq
Sofire	1410.03	ijklmnopq
SON-404Y	1405.49	jklmnopq
Candy Kim	1399.82	jklmnopq
Rio Del Sol	1361.25	klmnopq
OSYF12-7091	1329.49	lmnopqr
1407	1296.59	mnpqr
SS4402	1280.71	nopqr
Red Maiden	1275.04	nopqr
Vidora	1272.77	nopqr
Early Sweet	1268.23	opqr
1011	1189.96	pqr
Candy Ann	1161.6	qr
Candy Joy	1159.33	qr
SS4001	1089	r
Fast Track	1074.25	r

* Letters that are the same between varieties indicate that those varieties are not significantly different according to Tukey test ($P \leq 0.05$).

Table 4. Vidalia Onion **Marketable Yield** (40 lb. boxes/acre) measured ***after*** grading.

Variety	40 lb. box/A	
1014	1549.56	a
Rio Dulce	1458.81	ab
AG-3310	1454.27	abc
Maragogi	1454.27	abc
Tania	1417.97	abcd
Dulciana	1395.28	abcde
Sweet Agent	1383.94	abcdef
Red Duke	1379.4	abcdef
Torro Rosso	1356.71	abcdefg
Macon	1345.37	abcdefgh
Sofire	1338.56	abcdefghi
OSYF22-4022	1315.88	abcdefghij
369	1297.73	abcdefghijk
Sweet Tule	1293.19	abcdefghijk
XON 106Y	1281.84	abcdefghijk
Rio Del Sol	1272.77	abcdefghijk
380	1270.5	abcdefghijk
Red Halen	1265.96	abcdefghijk
Candy Kim	1250.08	abcdefghijkl
XON-300Y	1238.74	abcdefghijklm
SON-404Y	1234.2	abcdefghijklm
Vidora	1172.94	bcdefghijklmn
Chianti	1170.68	bcdefghijklmn
Red Maiden	1170.68	bcdefghijklmn
10258	1159.33	bcdefghijklmn
Mata Hari	1141.18	bcdefghijklmn
Reforma	1136.64	cdefghijklmn

Variety	40 lb. box/A	
Plethora	1123.03	defghijklmn
Monjablanca	1123.03	defghijklmn
1407	1120.76	defghijklmn
1011	1118.49	defghijklmn
OSYF10-4021	1098.08	efghijklmn
OSYF12-7091	1077.66	efghijklmn
Candy Ann	1068.58	fghijklmno
Early Sweet	1068.58	fghijklmno
Joelino	1052.7	ghijklmno
Copada	1045.89	ghijklmno
Georgia Boy	1027.74	hijklmno
EMY 55457	1020.94	ijklmno
Superex	1016.4	jklmno
A2800	993.71	klmno
SS4402	993.71	klmno
A2849	986.91	klmno
Candy Joy	941.53	lmno
Gilmore 26	941.53	lmno
SS4001	941.53	lmno
Century	941.53	lmno
Sweet Magnolia	939.26	lmno
Fast Track	936.99	lmno
Sapelo	927.92	mno
A2801	927.92	mno
A2290	880.28	no
Sweet Azalea	750.96	o

* Letters that are the same between varieties indicate that those varieties are not significantly different according to Tukey test ($P \leq 0.05$).

Table 5. Vidalia Onion **Colossal Yield** (40 lb. boxes/acre) measured after grading.

Variety	40 lb. box/ A	
XON 106Y	372.08	a
1014	308.55	ab
Sweet Agent	308.55	ab
Reforma	294.94	ab
AG-3310	285.86	ab
Sweet Magnolia	283.59	ab
Macon	276.79	abc
Century	240.49	abcd
Torro Rosso	226.88	bcde
Joelino	222.34	bcdef
EMY 55457	220.07	bcdef
Sweet Azalea	220.07	bcdef
Red Halen	217.8	bcdefg
Georgia Boy	195.11	bcdefgh
Tania	192.84	bcdefghi
Monjablanca	172.43	bcdefghij
OSYF10-4021	142.93	cdefghijk
Superex	138.39	cdefghijk
OSYF22-4022	136.13	defghijk
SON-404Y	129.32	defghijk
Copada	127.05	defghijk
XON-300Y	124.78	defghijk
Chianti	111.17	defghijk
A2849	108.9	defghijk
Dulciana	102.09	defghijk
Maragogi	99.83	efghijk
1407	93.02	efghijk

Variety	40 lb. box/A	
Candy Kim	93.02	efghijk
A2290	88.48	efghijk
Rio Dulce	83.94	fghijk
10258	79.41	ghijk
Plethora	77.14	hijk
Rio Del Sol	77.14	hijk
Red Duke	74.87	hijk
SS4402	70.33	hijk
OSYF12-7091	68.06	hijk
Gilmore 26	65.79	hijk
Mata Hari	65.79	hijk
Sapelo	63.53	hijk
Sofire	63.53	hijk
Vidora	61.26	hijk
380	61.26	hijk
Early Sweet	54.45	ijk
Sweet Tule	47.64	jk
369	45.38	jk
A2801	45.38	jk
A2800	40.84	jk
Candy Joy	31.76	k
SS4001	24.96	k
Red Maiden	18.15	k
Candy Ann	15.88	k
Fast Track	11.34	k
1011	4.54	k

* Letters that are the same between varieties indicate that those varieties are not significantly different according to Tukey test ($P \leq 0.05$).

Table 6. Vidalia Onion **Jumbo Yield** (40 lb. boxes/acre) measured after grading.

Variety	40 lb. box/ A	
Maragogi	1338.56	a
Rio Dulce	1336.29	a
Red Duke	1256.89	ab
1014	1229.66	ab
Sofire	1222.86	abc
369	1220.59	abcd
Sweet Tule	1216.05	abcd
Tania	1206.98	abcd
Dulciana	1204.71	abcde
AG-3310	1138.91	abcdef
380	1134.38	abcdef
OSYF22-4022	1132.11	abcdef
Torro Rosso	1107.15	abcdefg
Candy Kim	1102.61	abcdefgh
XON-300Y	1068.58	abcdefghi
10258	1068.58	abcdefghi
Macon	1048.16	abcdefghij
Vidora	1043.63	bcdefghij
Sweet Agent	1043.63	bcdefghij
1011	1041.36	bcdefghij
SON-404Y	1039.09	bcdefghij
Rio Del Sol	1027.74	bcdefghij
Red Maiden	1025.48	bcdefghij
Mata Hari	1020.94	bcdefghij
Plethora	1014.13	bcdefghij
Chianti	1005.06	bcdefghij
Red Halen	998.25	bcdefghij

Variety	40 lb. box/A	
1407	936.99	cdefghijk
A2800	934.73	cdefghijk
Monjablanca	930.19	defghijk
Candy Ann	930.19	defghijk
Early Sweet	914.31	efghijk
OSYF10-4021	909.77	fghijk
OSYF12-7091	907.5	fghijk
XON 106Y	896.16	fghijk
Copada	884.81	fghijk
A2801	868.93	fghijk
A2849	868.93	fghijk
Gilmore 26	868.93	fghijk
Superex	857.59	fghijk
SS4402	850.78	fghijk
Reforma	837.17	ghijk
Sapelo	828.09	ghijk
Joelino	816.75	ghijk
Georgia Boy	812.21	hijk
EMY 55457	791.79	ijkl
Candy Joy	791.79	ijkl
SS4001	789.53	ijkl
Fast Track	778.18	ijkl
A2290	773.64	jkl
Century	685.16	kl
Sweet Magnolia	648.86	kl
Sweet Azalea	515.01	l

* Letters that are the same between varieties indicate that those varieties are not significantly different according to Tukey test ($P \leq 0.05$).

Table 7. Vidalia Onion **Medium Yield** (40 lb. boxes/acre) measured after grading.

Variety	40 lb. box/ A	
Rio Del Sol	167.89	a
Fast Track	147.47	ab
Red Maiden	127.05	abc
SS4001	127.05	abc
Candy Ann	122.51	abcd
Candy Joy	117.98	abcd
OSYF12-7091	102.09	bcde
Early Sweet	99.83	bcde
1407	90.75	bcdef
Dulciana	88.48	cdefg
380	74.87	cdefgh
1011	72.6	cdefghi
SS4402	72.6	cdefghi
Vidora	68.06	defghij
SON-404Y	65.79	defghijk
Mata Hari	54.45	efghijkl
Candy Kim	54.45	efghijkl
Chianti	54.45	efghijkl
Sofire	52.18	efghijkl
Red Halen	49.91	efghijkl
OSYF22-4022	47.64	efghijkl
Red Duke	47.64	efghijkl
XON-300Y	45.38	efghijkl
OSYF10-4021	45.38	efghijkl
Rio Dulce	38.57	fghijkl
Sapelo	36.3	fghijkl
Copada	34.03	fghijkl

Variety	40 lb. box/A	
Plethora	31.76	ghijkl
369	31.76	ghijkl
Sweet Agent	31.76	ghijkl
AG-3310	29.49	hijkl
Sweet Tule	29.49	hijkl
Torro Rosso	22.69	hijkl
Monjablanca	20.42	hijkl
Georgia Boy	20.42	hijkl
Macon	20.42	hijkl
Superex	20.42	hijkl
Tania	18.15	hijkl
A2800	18.15	hijkl
A2290	18.15	hijkl
Century	15.88	ijkl
Maragogi	15.88	ijkl
Sweet Azalea	15.88	ijkl
Joelino	13.61	jkl
A2801	13.61	jkl
XON 106Y	13.61	jkl
1014	11.34	jkl
10258	11.34	jkl
EMY 55457	9.08	kl
A2849	9.08	kl
Gilmore 26	6.81	l
Sweet Magnolia	6.81	l
Reforma	4.54	l

* Letters that are the same between varieties indicate that those varieties are not significantly different according to Tukey test ($P \leq 0.05$).

Table 8. Vidalia Onion **Cull Weights** (40 lb. boxes/acre) measured after grading.

Variety	40 lb. box/ A	
Sweet Magnolia	929.05	a
Sweet Azalea	885.95	ab
Century	755.49	abc
Joelino	671.55	bcd
Reforma	623.91	cde
A2290	622.77	cde
Georgia Boy	621.64	cde
Superex	584.2	cdef
A2849	575.13	cdefg
Monjablanca	542.23	cdefgh
A2801	530.89	cdefghi
Sapelo	510.47	defghij
EMY 55457	504.8	defghij
Gilmore 26	496.86	defghijk
A2800	474.17	defghijkl
XON 106Y	419.72	efghijklm
10258	382.28	fghijklmn
Copada	369.81	fghijklmno
Red Halen	352.79	ghijklmnop
Macon	338.04	hijklmnop
Mata Hari	326.7	hijklmnopq
OSYF10-4021	319.89	hijklmnopqr
Chianti	308.55	ijklmnopqrs
Plethora	306.96	ijklmnopqrs
SS4402	287	jklmnopqrst
Torro Rosso	272.25	klmnopqrst
Tania	260.91	lmnopqrst

Variety	40 lb. box/A	
OSYF12-7091	251.83	lmnopqrst
1014	250.7	lmnopqrst
Sweet Agent	235.95	mnopqrst
Candy Joy	217.8	mnopqrst
Sweet Tule	207.59	mnopqrst
Early Sweet	199.65	mnopqrst
XON-300Y	198.52	mnopqrst
369	187.17	nopqrst
1407	175.83	nopqrst
AG-3310	175.83	nopqrst
SON-404Y	171.29	nopqrst
OSYF22-4022	170.16	nopqrst
380	153.14	opqrst
Candy Kim	149.74	opqrst
SS4001	147.47	opqrst
Fast Track	137.26	pqrst
Dulciana	133.86	pqrst
Maragogi	127.05	pqrst
Rio Dulce	106.63	qrst
Red Maiden	104.36	qrst
Vidora	99.83	qrst
Candy Ann	93.02	rst
Red Duke	91.88	st
Rio Del Sol	88.48	st
Sofire	71.47	t
1011	71.47	t

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Introduction

Each season the University of Georgia, Agricultural and Environmental Services Laboratories evaluates the flavor-associated compounds in the short-day onions grown in the variety trial. These onion varieties are submitted by the participating seed companies, grown at the Vidalia Onion and Vegetable Research Center (VOVRC), and once harvested and dried, are submitted to the Agricultural and Environmental Services Laboratories for analysis of the pungency-related compounds; pyruvic acid, lachrymatory factor (LF), and methyl thiosulfinates. Due to the association of Vidalia onions with low pungency and sweet flavor, this annual evaluation provides useful information about the relative flavor quality of these onion varieties. Furthermore, results are used to evaluate yellow Granex varieties before officially qualifying them to be grown as sweet Vidalia onions in the region.

This publication summarizes the flavor analysis results from the 2023-2024 growing season, as well as comparing the performance of each variety over the past three growing seasons.

Materials and methods

Fifty-three onion varieties were analyzed as part of the 2023 – 2024 variety trial. Each variety was grown at the VOVRC in quadruplicate plots. Harvested onions from each plot were graded, dried, and submitted to the lab individually. Cores taken from 10 onions within each replicate were composited and pressed to collect the onion juice, analyzed following procedures described in Kim *et al.* 2017¹.

Results and Discussion

Tables 1-3 compare the concentrations of flavor-associated compounds in onions grown as a part of the 2023-2024 variety trial. It should be noted that as the three measured parameters decrease, the onions are considered to have a superior flavor quality. In this year's Yellow Granex variety trials, the pyruvic acid (pungency) content ranged from 2.5-6.0 $\mu\text{mol/mL}$, which is a decrease of 12% compared to the past two growing seasons. Lachrymatory factor ranged from 0.5-2.1 $\mu\text{mol/mL}$, which was a decrease of 83% compared to the last two seasons. Finally, methyl thiosulfinates ranged from 2.7-16.6 nmol/mL which was a decrease of 79% compared to the previous growing seasons. Overall, the flavor quality of the variety trial onions was significantly improved as compared to the past two seasons. This could be attributed to the increased rainfall prior to bulb initiation, which may have leached more sulfur from the soil. The cumulative variety flavor quality rankings are also provided below for this year's data along with the average rating of yellow Granex onion varieties grown over the past three seasons. For additional information regarding the performance of a given variety, please contact your Extension Agent or the Vidalia Onion and Vegetable Research Center. We would like to thank the participating seed companies as well as the Vidalia Onion Committee for their support of this trial.

References

¹Kim H, Jackson D, Adhikari K, Riner C, & Sanchez-Brambila G. 2017. "Relationship between consumer acceptability and pungency-related flavor compounds of Vidalia onions", *Journal of Food Science*. 82 (10): 2396-2402.

Table 1. Pungency (pyruvic acid) content in onions submitted to the UGA Agricultural & Environmental Services Labs as a part of the 2023-2024 variety trial.

Variety	Pyruvic Acid (μ mole/g)		Variety	Pyruvic Acid (μ mole/g)	
Gilmore 26	2.5	a	Reforma ^c	4.5	bcdefg
SS4402	3.2	ab	Candy Joy	4.6	bcdefg
A2801	3.3	abc	Red Halen	4.6	bcdefg
Sweet Azalea	3.7	abcd	Monja blanca	4.6	bcdefg
Macon	3.7	abcd	XON-300Y	4.7	bcdefg
A2800	3.7	abcd	369	4.7	bcdefg
SS4001	3.7	abcd	Copada ^d	4.7	bcdefg
Sweet Magnolia	3.8	abcd	OSYF12-7091	4.7	bcdefg
1407	3.8	abcd	Vidora	4.7	bcdefg
Candy Ann	3.9	abcde	A2849	4.7	bcdefg
Red Duke	3.9	abcde	Tania	4.8	bcdefg
A2290	3.9	abcde	EMY 55457	4.8	bcdefg
1014 ^b	4.0	abcdef	Early Sweet	4.9	bcdefg
Candy Kim	4.0	abcdef	Superex	4.9	bcdefg
Sweet Agent	4.1	abcdef	Chianti	5.0	bcdefg
XON-404Y	4.1	abcdefg	Georgia Boy	5.0	cdefg
Maragogi	4.2	abcdefg	Mata Hari	5.1	cdefg
Plethora	4.2	abcdefg	Century	5.2	defg
Fast Track	4.3	abcdefg	OSYF10-4021	5.3	defg
Torro Rosso	4.3	bcdefg	Rio Dulce	5.4	defg
XON 106Y	4.3	bcdefg	Dulciana	5.5	defg
Sapelo	4.4	bcdefg	Joelino	5.7	efg
AG-3310	4.4	bcdefg	10258 ^e	5.7	efg
OSYF22-4022	4.4	bcdefg	Rio Del Sol	5.8	fg
Sweet Tule	4.4	bcdefg	Sofire	5.9	g
1011	4.5	bcdefg	380	6.0	g
Red Maiden	4.5	bcdefg			

*Similar letters between varieties indicate those varieties are not significantly different according to Tukey test ($P \leq 0.05$).

^b formerly 5901

^c formerly EMY 55455

^d formerly EMY 55126

^e formerly A1298

Table 2. Onion lachrymatory factor (propanethial S-oxide) content in onions submitted to the UGA Agricultural & Environmental Services Labs as a part of the 2023-2024 variety trial.

Variety	Lachrymatory Factor (μmole/g)		Variety	Lachrymatory Factor (μmole/g)	
Gilmore 26	0.5	a	OSYF22-4022	1.3	abcdefg
SS4402	0.7	ab	369	1.3	abcdefg
Fast Track	0.7	ab	AG-3310	1.3	abcdefg
A2801	0.7	abc	Plethora	1.3	abcdefg
Sweet Agent	0.7	abc	10258 ^c	1.3	abcdefg
1407	0.8	abcd	EMY 55457	1.3	abcdefg
Red Duke	0.8	abcd	Sweet Azalea	1.3	abcdefg
Tania	0.9	abcde	Monja blanca	1.3	abcdefg
A2800	0.9	abcde	XON-404Y	1.4	abcdefg
Vidora	0.9	abcdef	Chianti	1.4	abcdefg
Candy Kim	0.9	abcdef	XON-300Y	1.4	abcdefg
Candy Ann	0.9	abcdef	Torro Rosso	1.5	bcdefg
1011	0.9	abcdef	Mata Hari	1.5	bcdefg
Candy Joy	1.0	abcdef	Sweet Tule	1.5	bcdefg
Early Sweet	1.0	abcdef	Red Halen	1.5	bcdefg
Red Maiden	1.0	abcdef	Joelino	1.5	bcdefg
1014 ^b	1.0	abcdef	XON 106Y	1.5	bcdefg
SS4001	1.0	abcdef	Sofire	1.5	bcdefg
Maragogi	1.1	abcdef	Rio Dulce	1.7	cdefg
OSYF12-7091	1.1	abcdef	Copada ^d	1.7	defg
Macon	1.1	abcdef	Reforma ^e	1.7	defg
A2290	1.1	abcdef	Sapelo	1.8	efg
OSYF10-4021	1.2	abcdefg	Georgia Boy	1.8	efg
A2849	1.2	abcdefg	380	1.8	fg
Superex	1.2	abcdefg	Century	1.8	fg
Dulciana	1.2	abcdefg	Rio Del Sol	2.1	g
Sweet Magnolia	1.3	abcdefg			

**Similar letters between varieties indicate those varieties are not significantly different according to Tukey test ($P \leq 0.05$).*

^b formerly 5901

^c formerly A1298

^d formerly EMY 55126

^e formerly EMY 55455

Table 3. Methyl thiosulfinate content in onions submitted to the UGA Agricultural & Environmental Services Labs as a part of the 2023-2024 variety trial.

Variety	Methyl Thiosulfinates (nmole/g)		Variety	Methyl Thiosulfinates (nmole/g)	
Gilmore 26	2.7	a	Candy Joy	8.2	abcdefg
A2801	3.2	a	Sweet Tule	8.2	abcdefg
SS4402	4.0	ab	10258 ^e	8.5	abcdefg
SS4001	4.3	ab	Rio Del Sol	8.6	abcdefg
A2800	4.4	ab	Red Halen	8.9	abcdefg
Vidora	4.4	ab	Dulciana	8.9	abcdefg
Georgia Boy	4.8	abc	Rio Dulce	8.9	abcdefg
A2849	4.8	abc	369	9.1	abcdefg
EMY 55457	5.5	abcd	AG-3310	9.2	abcdefg
Candy Kim	5.5	abcd	Torro Rosso	9.2	abcdefg
1407	5.7	abcde	Century	9.7	abcdefg
Superex	5.8	abcde	Fast Track	9.8	abcdefg
Sweet Azalea	5.8	abcde	Mata Hari	10.4	abcdefg
Early Sweet	5.9	abcdef	Chianti	10.9	abcdefg
A2290	6.3	abcdef	Sapelo	11.9	abcdefg
Plethora	6.4	abcdef	XON-300Y	11.9	abcdefg
Tania	6.5	abcdef	Monja blanca	12.0	abcdefg
1014 ^b	7.0	abcdef	Macon	13.0	bcdefg
Red Duke	7.0	abcdef	Sofire	13.3	bcdefg
Maragogi	7.0	abcdef	380	13.5	bcdefg
Red Maiden	7.2	abcdefg	Joelino	14.3	cdefg
1011	7.6	abcdefg	OSYF10-4021	14.9	defg
Sweet Agent	7.8	abcdefg	XON 106Y	15.2	efg
Reforma ^c	7.8	abcdefg	XON-404Y	15.4	fg
Candy Ann	7.9	abcdefg	OSYF22-4022	15.4	fg
Copada ^d	8.1	abcdefg	OSYF12-7091	16.6	g
Sweet Magnolia	8.1	abcdefg			

*Similar letters between varieties indicate those varieties are not significantly different according to Tukey test ($P \leq 0.05$).

^b formerly 5901

^c formerly EMY 55455

^d formerly EMY 55126

^e formerly A1298

Table 4. Overall flavor quality ranking of the 2023-2024 variety trial onions ranked on lowest Pyruvic acid, Lachrymatory factor, and Methyl Thiosulfinates.

Variety	Rank		Variety	Rank	
Gilmore 26	1	a	369	28 (t)	bcde
SS4402	2	ab	Monja blanca	28 (t)	bcde
A2801	3	abc	XON-300Y	28 (t)	bcde
A2800	4	abcd	AG-3310	28 (t)	bcde
SS4001	5	abcd	Chianti	28 (t)	bcde
1407	6	abcd	Torro Rosso	33 (t)	bcde
Red Duke	7	abcde	Sweet Tule	33 (t)	bcde
Fast Track	8 (t)	abcde	Red Halen	33 (t)	bcde
Candy Kim	8 (t)	abcde	Georgia Boy	33 (t)	bcde
Sweet Agent	8 (t)	abcde	Dulciana	37 (t)	bcde
Sweet Azalea	8 (t)	abcde	Mata Hari	37 (t)	bcde
Vidora	8 (t)	abcde	10258 ^c	39 (t)	cde
A2290	13	abcde	Copada ^d	39 (t)	cde
Macon	14 (t)	abcde	Reforma ^e	39 (t)	cde
Candy Ann	14 (t)	abcde	XON-404Y	42 (t)	de
A2849	14 (t)	abcde	Sapelo	42 (t)	de
1014 ^b	14 (t)	abcde	Rio Dulce	42 (t)	de
Sweet Magnolia	14 (t)	abcde	OSYF22-4022	45 (t)	de
EMY 55457	19 (t)	abcde	OSYF12-7091	45 (t)	de
Maragogi	19 (t)	abcde	OSYF10-4021	45 (t)	de
Tania	19 (t)	abcde	XON 106Y	45 (t)	de
Early Sweet	22 (t)	abcde	Joelino	49	de
Superex	22 (t)	abcde	Sofire	50 (t)	de
Plethora	22 (t)	abcde	Century	50 (t)	de
Candy Joy	25 (t)	abcde	Rio Del Sol	50 (t)	e
Red Maiden	25 (t)	abcde	380	53	e
1011	25 (t)	abcde			

^b formerly 5901

^c formerly A1298

^d formerly EMY 55126

^e formerly EMY 55455

Table 5. Overall flavor quality ranking of yellow variety trial onions harvested in three consecutive years (2022-2024) ranked in order of lowest overall Pyruvic acid, Lachrymatory factor, and Methyl Thiosulfinates. Only yellow Granex varieties were included in the table.

Variety	Rank	
Candy Kim	1 (t)	a
Maragogi	1 (t)	a
Tania	3	ab
Emy 55457	4 (t)	abc
Plethora	4 (t)	abc
Sweet Azalea	4 (t)	abc
Reforma ^a	5 (t)	abc
Sweet Agent	5 (t)	abc
Vidora	9 (t)	abc
Sweet Magnolia	9 (t)	abc
Superex	9 (t)	abc
Macon	9 (t)	abc
Fast Track	9 (t)	abc
Georgia Boy	14 (t)	abc
Copada ^b	14 (t)	abc
Candy Ann	16 (t)	bc
Sapelo	16 (t)	bc
Century	18 (t)	c
EMY 55457	18 (t)	c
Candy Joy	20	c

^a formerly EMY 55455

^b formerly EMY 55126